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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/085,082 | 03/01/2002 | Masaaki Adachi | 220102US2 | 9116 |

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ALEXANDRIA, VA 22314

EXAMINER

LYONS, MICHAEL A

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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2877

DATE MAILED: 08/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/085,082

Applicant(s)

ADACHI, MASAOKI

Examiner

Michael A. Lyons

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Objections

Claim 1 is objected to because of the following informalities: in line 21 of the claim, there is no clear explanation as to what the variable "n" stands for in the phase range listed. The use of the variable is obvious, yet should still be clearly explained. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wyant et al (4,832,489).

Regarding claim 1, Wyant (Fig. 1) discloses a device where a pair of lasers 2 and 3, each emitting light at a different wavelength. The extra distance laser 2 has to travel due to reflection off mirror 5 creates a time interval. These light beams travel through the system, are reflected off the aspheric test surface 25, the reference mirror 18 and wedge 21, and then strike the detector array 29A. In the system, however, the lasers are light flash lamps, and the reference path is subjected to movement, not the measurement object.

In the current application, the flash lamps are passed through bandpass filters so that only a single wavelength of each lamp passes through the system. The lasers are functionally similar, since they only generate one wavelength of light for the system as well. Additionally, while the

reference path has movement generated by PZT 19 rather than the measurement object, the movement of the reference path rather than the measurement path will generate a phase difference within the desired range (see column 8, lines 21-43) in the same manner as adjusting the measurement object.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Wyant with the flash lamps and with the movable object location as claimed due to the functional equivalency of the claimed method and apparatus with the patented device.

As for claim 2, the single laser wavelengths are functional equivalents to broadband light being passed through a bandpass filter.

As for claim 3, the detector array is a functional equivalent to the claimed camera.

Claims 4-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wyant et al (4,832,489).

Regarding claims 4 and 8, Wyant (Fig. 1) discloses a first laser 3, a second laser 2 with a time delay between the first laser and second laser caused by a path difference generated by mirror 5, a PZT 19 for moving reference mirror 18, a beam splitter 16 for splitting light to the appropriate paths within the interferometer, a detector array 29A, a PZT control 29B, and a computer 40 as an image processing unit. The lasers are not flash light sources, the measurement surface is not given any motion, and the detector array is not an actual camera.

In the current application, the flash lamps are passed through bandpass filters so that only a single wavelength of each lamp passes through the system. The lasers are functionally similar, since they only generate one wavelength of light for the system as well. Additionally, while the

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reference path has movement generated by PZT 19 rather than the measurement object, the movement of the reference path rather than the measurement path will generate a phase difference within the desired range (see column 8, lines 21-43) in the same manner as adjusting the measurement object. Finally, the detector array is a functional equivalent to the claimed camera.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Wyant with the flash lamps and with the movable object location and the camera as claimed due to the functional equivalency of the claimed method and apparatus with the patented device.

As for claims 5 and 9, the single laser wavelengths are functional equivalents to the broadband light of flash lamps being passed through a bandpass filter.

As for claims 6 and 10, the detector array is a functional equivalent to the claimed camera.

As for claims 7 and 11, the movement of the PZT on the reference mirror generates a phase difference within the desired range (see column 8, lines 21-43) in the same manner as adjusting the measurement object.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Pat. No. 5,042,949, an optical profiler for films and substrates to Greenberg et al, and US Pat. No. 5,706,085, a method for the non-contact rapid and accurate acquisition of the surface topology of objects to Blossey et al.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael A. Lyons whose telephone number is 703-305-1933.

The examiner can normally be reached on Monday thru Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G Font can be reached on 703-308-4877. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-0725 for regular communications and 703-308-0725 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0935.

MAL
July 24, 2003



Samuel A. Turner
Primary Examiner